BTS

Broadcast Television Systems GmbH

A joint company of Bosch and Philips

BCB 75/70/65/60
Studio Recorder/Player
for Betacam SP Videocassettes

BCB 75 Film Quality Recording, Replaying . . .

The Betacam format originally developed for ENG is today in wide spread use in the ENG/EFP industry.

To meet the demands for an improved picture and sound quality and a longer playing time, while maintaining compatibility, the new Betacam SP Standard was developed.

Superior picture quality
The BCB 75 employs the new Betacam SP standard which together with metal particle tape raises the picture quality to a remarkably high level. Other new techniques also introduced contribute to the VTR's new video reproduction standard. In particular, the FM carrier frequency has been raised, making possible significant improvements in luminance bandwidth, signal-to-noise ratio and the pulse-bar response in both luminance and chrominance channels. All these characteristics determine the multigeneration picture performance.

Dynamic-tracking playback
With the new DT head and circuit technology, the BCB 75 can playback broadcast quality video from – 1 to + 2 times normal speed continously. It also has a variable memory for storage and recall of tape speeds within that range.

Extended recording-playback time
The BCB 75 accepts beside the S-Cassette (5, 10, 20, or 30 minutes) the new L-Cassette (60 or 90 minutes). In the PAL-Standard the time increases for S-Cassette to 36 min. and L-Cassette to 108 min.

Video/audio confidence heads
The unit is equipped with video and audio 1 and 2 confidence heads for simultaneous playback during recording.

Built in TBC
A built-in time base corrector provides broadcast quality video signals. A high quality digital dropout-compensation also ensures consistent picture performance.

Maintenance alleviation
The BCB 75 has built in indicators for power on, drum running time and threading/unthreading cycles. Quick serviceability is supported with comprehensive self diagnostics.

and Editing in the Studio

Multichannel audio

Four channels – two longitudinal ones with Dolby C and two FM channels (simultaneously recorded with the video signal by the rotary video heads) – are provided.
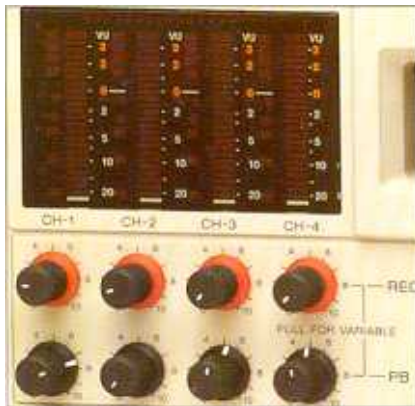
The adjustment of record and playback level can be done with the individual potentiometers. By pressing those buttons the channels are set to unity gain. The bargraph display can be selected either for VU- or Peak-display.

Built-in editing

The BCB 75 is equipped with a built-in editor. All modern editing capabilities are possible via an 9 pin interface RS 422.
- Split audio-editing with independent IN and OUT memories.
- Frame by frame forward and reverse trim
- DMC (Dynamic motion control) is provided during editing. Using a DT equiped player VTR with RS-422 interface (BCB 15, 65, 75) the BCB 75 can memorize the tape speed of the player VTR achieving broadcastable playback at – 1 to + 2 times normal speed. After memorizing, the DMC function can be used either in edit or play mode.

Built-in timecode generator, reader and character display
- Built-in timecode generator for LTC, VITC and User-Bits.
- Presettable User Bits can be stored in the non-volatile memory.
- External/Internal time code (REGEN/PRESET – REC RUN/ FREE RUN)

SMPTE/EBU component connectors

In addition to the 12 pin dub connectors the new Betacam SP studio models are equipped with separate BNC connectors for Y, R-Y, B-Y, which are adjusted for the proper SMPTE/EBU component levels.
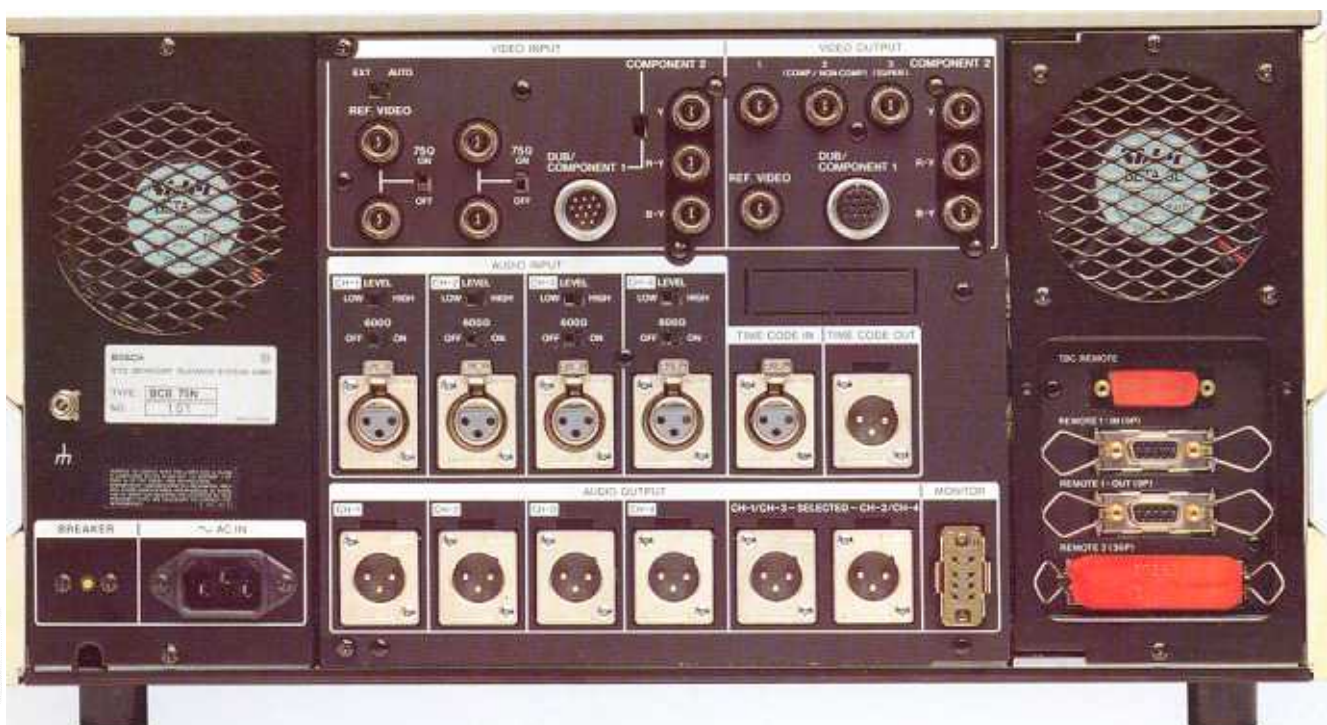
Capstan override

Normal playback-speed can be varied by ± 16% using the search dial or by ± 8% using the TRIM buttons.

High speed picture search

Picture search can be done at various speeds up to 24 times normal speed in forward and reverse mode. Up to 5 times normal speed a color picture can be obtained.

Color framing

A 4 field/8 field capstan servo provides for color framing to be introduced in cases where it is necessary for maintaining a good playback-encoded NTSC/PAL composite video signal, without degradation or horizontal shift. The color-framing is based on ID-Pulse and VISC (Vertical interval subcarrier).

SC-H indicator

The BCB 75 has two independent SC-H phase indicators for composite input and output. Using these, the operator can easily check the status of input and output signals.

Initial set-up menu/Character display

A initial set-up menu has been introduced. It can be scrolled and modified by the search dial while monitoring video out 3 or the timer display on the frontpanel. The individual set-up is stored in a nonvolatile memory. The character display which is superimposed via video output 3, displays VITC/LTC/U-BIT or CTL data furthermore function status and shuttle speeds.
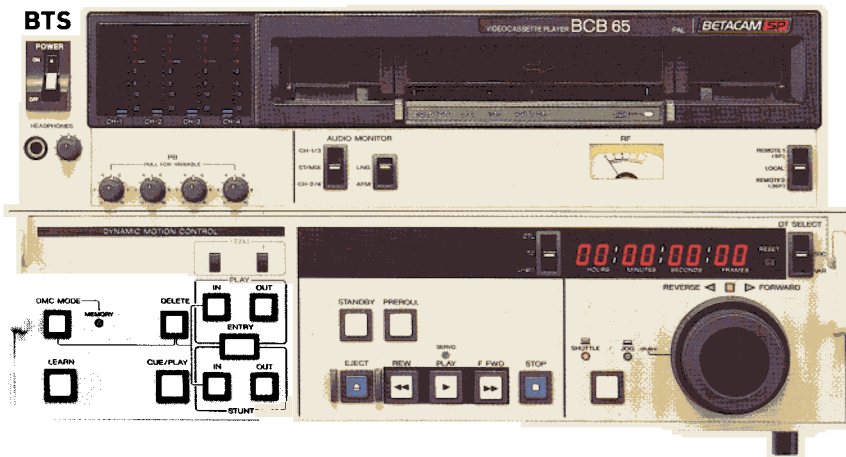
BCB 70 Studio Recorder/ Player

The studio recorder/player BCB 70 is the workshorse for editing suites, which provides full edit capabilities for mastering purposes.

BCB 65/60 Studio Players

BCB 65 Studio Player with Dynamic Tracking

The Studio Players BCB 65/60 do have the same relevant parameters and specifications as the BCB 75 model described before.

## BCB 60 Studio Player

The Studio Players BCB 60 is the ideal machine, where only playback of recorded Betacam SP cassettes is necessary. Due to the built – in TBC the player can be used in the transmission area or as a slave machine in an editing suite. The usage of the small and large size cassettes allows for continous playback of up to 90 min (NTSC) and over 100 min (PAL).

BCB 65/60 Rearpanel
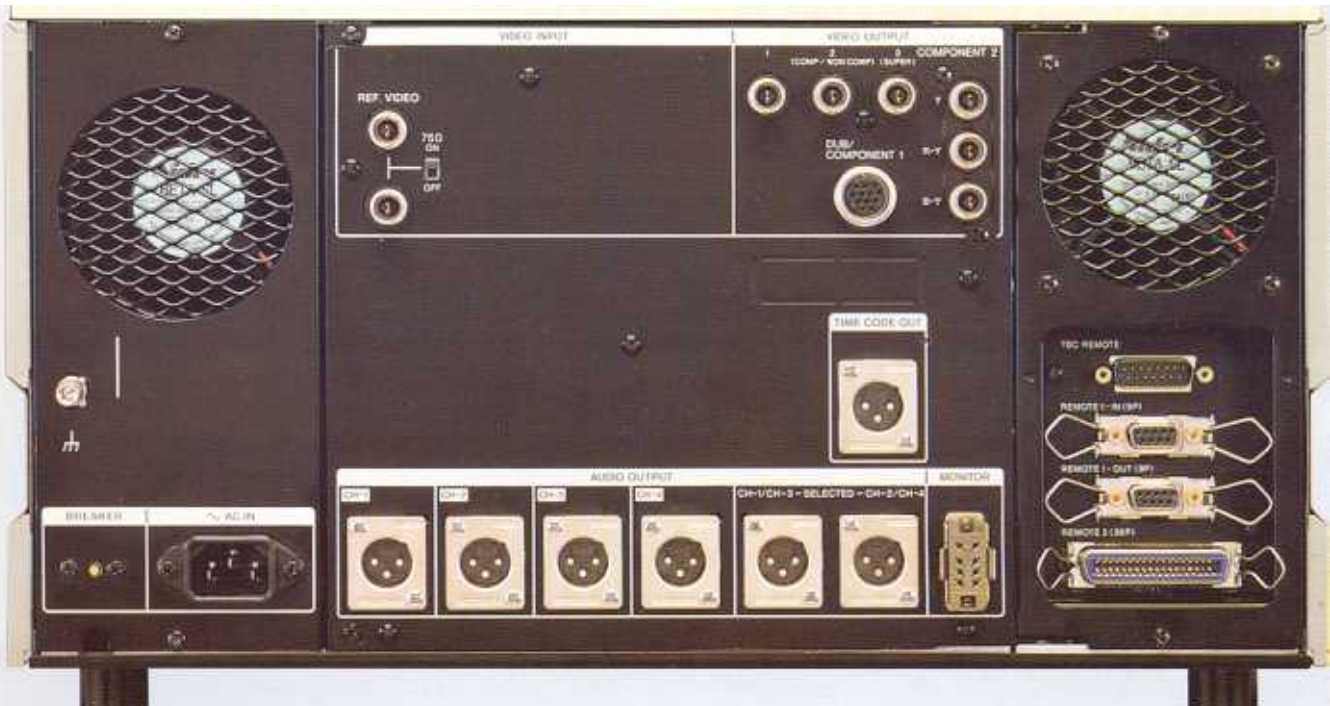
Specifications
for BCB 75/70/65/60

General

Power requirements	AC 90 to 265 V, 48 to 64 Hz
Power consumption	
BCB 75/70	225 W approx.
BCB 65	175 W approx.
BCB 60	160 W approx.
Operating temperature	+ 5°C to + 40°C
	(+ 41°F to + 104°F)
Storage temperature	− 20°C to + 60°C
	(− 4°F to +140°F)
Humidity	Less than 80 %
	(relative humidity)
Weight BCB 75/70	30 kg (66 lb 2 oz)
BCB 65	28 kg (61 lb 11 oz)
BCB 60	27 kg (59 lb 8 oz)
Tape speed	NTSC: 11.86 cm/sec.
	PAL: 10.15 cm/sec.
Playback time/ NTSC:	More than 90 min. (BBT-90ML),
Recording time	more than 30 min. (BBT 30 M)
PAL:	More than 100 min. (BBT-90ML),
	more than 35 min (BBT 30M)
Fast forward/rewind time	Less than 180 sec. with BBT-90ML
Search speed	
SHUTTLE	STILL, 1/30, 1/10, 1/5, 1/2, 1, 2, 5, and 24 times normal speed, forward and reverse
VAR	−1, −1/2, −1/5, −1/10, −1/30, STILL, 1/30, 1/10, 1/5, 1/2, 1, and 2 times normal speed
JOG	Frame by frame, forward and reverse
Dynamic tracking range	− 1 to + 2 times normal speed (for BCB 75/65 only)
Lock up time	Less than 0.6 sec. (NTSC); 0,8 sec. (PAL) from standby mode

Signal inputs

REF VIDEO IN (BNC)	1.0 V_{p-p}, 75 ohms
	for BCB 75/70 only
VIDEO IN (BNC)	Composite video, 1.0 V_{p-p}, 75 ohms, sync negative
DUB/COMPONENT	
(12-pin male)	
Luminance	1.0 V_{p-p}, 75 ohms, sync negative
Chrominance	R-Y: 0.7 V_{p-p}, 75 ohms
	B-Y: 0.7 V_{p-p}, 75 ohms
	(for 75 % saturation)
COMPONENT IN (BNC)	
Luminance	1.0 V_{p-p}, 75 ohms, snyc negative
Chrominance	R-Y: 0.7 V_{p-p}, 75 ohms
	B-Y: 0.7 V_{p-p}, 75 ohms
	(for 100 % saturation)
AUDIO IN CH 1/2/3/4	
(XLR 3-pin female)	
LOW	− 60 dBm, 600 ohms/3 k ohms selectable, balanced
HIGH	+ 4 dBm, 600 ohms/10 k ohms selectable, balanced
TIME CODE IN	
(XLR 3-pin female)	0.5 V to 18 V_{p-p}, 10 k ohms, balanced

Signal outputs

VIDEO OUT 1 (BNC)	Composite video: 1.0 V_{p-p}, 75 ohms, sync negative
VIDEO OUT 2 (BNC)	Composite video: 1.0 V_{p-p}, 75 ohms, sync negative
VIDEO OUT 3 (BNC)	Composite video: 1.0 V_{p-p}, 75 ohms, sync negative with switchable character insertion

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DUB/COMPONENT OUT	
(12-pin male)	
Luminance	1.0 V_{p-p}, 75 ohms, sync negative
Chrominance	R-Y: 0.7 V_{p-p}, 75 ohms
	B-Y: 0.7 V_{p-p}, 75 ohms
	(for 75 % saturation)
Component OUT (BNC)	
Luminance	1.0 V_{p-p}, 75 ohms, sync negative
Chrominance	R-Y: 0.7 V_{p-p}, 75 ohms
	B-Y: 0.7 V_{p-p}, 75 ohms
	(for 100 % saturation)
AUDIO LINE OUT	
(XLR 3-pin female)	+ 4 dBm, 600 ohms, balanced
CH 1/2/3/4	
AUDIO SELECTED	
(XLR 3-pin female)	+ 4 dBm, 600 ohms, balanced
LINE OUT 1/2	
TIME CODE OUT	
(XLR 3-pin female)	2.2 V_{p-p}, 600 ohms, balanced
Processor adjustment range	
Video level	± 3 dB
Chroma level	± 3 dB
Setup level/Black level	0 to + 15 IRE/0 to 110 mV
Hue (NTSC only)	± 15°
System SC Phase	360°p-p
System sync phase	+ 3 to − 1 μsec.
Y/C delay	± 50 nsec.

Others

REMOTE 1 IN	9-pin female
REMOTE 1 OUT	9-pin female
REMOTE 2	36-pin female
TBC REMOTE	15-pin male
MONITOR	8-pin female
HEADPHONES	JM-60 headphone stereo phone jack

Supplied accessories

AC power cord (1)
Remote control cable RCC-5G (9-pin) (1)
Extension board (3)
Operation and maintenance manual (1)
12-pin dubbing cable (1) (for BCB 75/70 only)

Dimensions

520 (20¹/₂)
549 (21⁵/₈)

Unit: mm (inches)
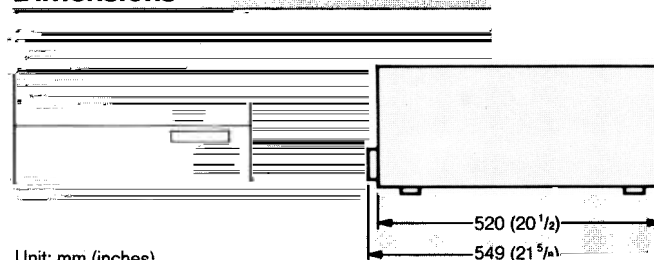
Optional accessories

19" Rack mount unit	RMM 100
Video cassette	Metal tapes BBT 20M/30M/90ML
TBC remote control	PAL BVR 50 P with 5 m cable
	NTSC BVR 50 N with 5 m cable
VTR remote control	BRC 75 with 5 m cable
(tape deck control)	
9-pin remote control	RCC 5-G (5 m), RCC 10-G (10 m),
cable	RCC 30-G (30 m)
12-pin dub cable	7 000 000 163
Editing control unit	BBE 900

Design and specifications are subject to change without notice.

Video Performance
Audio Performance

Video Characteristics	PAL		NTSC	
	Metal Particle Tape	Oxide Tape	Metal Particle Tape	Oxide Tape
Bandwidth				
Luminance (50 % Mod.)	25 Hz to 5.5 MHz $^{+0.5}_{-3.0}$ dB	25 Hz to 4.0 MHz $^{+0.5}_{-6.0}$ dB	30 Hz to 4.5 MHz $^{+0.5}_{-3.0}$ dB	30 Hz to 4.1 MHz $^{+0.5}_{-6.0}$ dB
Chrominance R−Y / B−Y (50 % Mod.)	25 Hz to 1.5 MHz $^{+0.5}_{-3.0}$ dB	25 Hz to 1.5 MHz $^{+0.5}_{-3.0}$ dB	30 Hz to 1.5 MHz $^{+0.5}_{-3.0}$ dB	30 Hz to 1.5 MHz $^{+0.5}_{-3.0}$ dB
S/N ratio				
Luminance	> 48 dB (Component IN/OUT) > 45 dB (Composite IN/OUT)	> 46 dB (Component IN/OUT) (Noise Canc.: ON)	> 51 dB (Component IN/OUT) 49 dB (Composite IN/OUT)	> 48 dB (Component IN/OUT)
Chrominance 1.5 MHz L.P.F.	48 dB	45 dB	53 dB	50 dB
Distortion				
Differential gain	Less than 2 %	Less than 3 %	Less than 2 %	Less than 2 %
Differential phase	Less than 2°	Less than 3°	Less than 2°	Less than 2°
K-factor (2T pulse)	Less than 2 %	Less than 3 %	Less than 2 %	Less than 2 %
Y/C delay	Less than 20 nsec.	Less than 20 nsec.	Lessthan 20 nsec.	Less than 20 nsec.
L.F. linearity	Less than 3 % (Components) Less than 4 % (Composite)	Less than 3 % Lum. Color Diff. R−Y/B−Y < 4 %	Less than 2 % (Components) Less than 3 % (Composite)	Less than 2 % Lum. Color Diff. R−Y/B−Y < 3 %

Audio Characteristics	PAL		NTSC	
	Metal Particle Tape	Oxide Tape	Metal Particle Tape	Oxide Tape
Longitudinal				
Frequency response (20 dB below peak level)	50 Hz to 15 kHz $\pm\frac{1}{2}$ dB	50 Hz to 15 kHz ± 3 dB	50 Hz to 15 kHz $\pm\frac{1}{2}$ dB	50 Hz to 15 kHz ± 3 dB
S/N ratio (at 3 % distortion)	> 66 dB	50 dB (Dolby NR off)	72 dB	50 dB (Dolby NR off)
Distortion (T.H.D. at 1 kHz reference level)	Less than 1 %	Less than 2 %	Less than 1 %	Less than 2 %
Crosstalk (at 1 kHz reference level)	Less than −71 dB	—	Less than − 65 dB	—
Phase difference	Less than 20° (at 15 kHz)	—	Less than 20° (at 15 kHz)	—
Depth of erasure	More than 70 dB (Rec mode) More than 65 dB (Insert mode)	More than 70 dB	More than 70 dB (Rec mode) More than 65 dB (Insert mode)	More than 70 dB
Wow and flutter DIN 45 507	Less than 0.1 % rms (DIN weighted)	Less than 0,1 % rms (DIN weighted)	Less than 0.1 % rms	Less than 0.1 % rms
FM Audio with N.R.				
Frequency response (20 dB below peak level)	20 Hz to 20 kHz $^{+0.5}_{-2.0}$ dB	—	20 Hz to 20 kHz $^{+0.5}_{-2.0}$ dB	—
S/N ratio (at peak level) weighted CCIR-468-3	> 68 dB	—	> 68 dB	—
Distortion (T.H.D. at 1 kHz reference level)	Less than 0.5 %	—	Lessthan 0.5 %	—
Phase difference	Less than 10° (at 20 kHz)	—	Less than 10° (at 20 kHz)	—
Crosstalk (at 1 kHz reference level) 100 Hz to 12.5 kHz	Less than −70 dB	—	Less than −70 dB	—

Tape Material

Metal tapes for Betacam SP quality

BBT 20 M	7 000 000 110	Small size videocassette for 20 min playing time
BBT 30 M	7 000 000 111	Small size videocassette for 30 min playing time
BBT 90 ML	7 000 000 112	Large size videocassette for 90 min playing time

Oxide tapes for standard Betacam quality

BBT 20	7 000 000 027	Small size videocassette for 20 min playing time
BBT 30	7 000 000 030	Small size videocassette for 30 min playing time
BBT 90 L	7 000 000 052	Large size videocassette for 90 min playing time

Cleaning tape

BBT 05 CL	7 000 000 088	Small size cleaning cassette

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